第 41 卷 第 4 期 昆 虫 学 报 Vol. 41, No. 4
1998 年 11 月 ACTA ENTOMOLOGICA SINICA Nov., 1998

A STUDY ON THE CHINESE *SCHIZAPHIS* BÖRNER, WITH DESCRIPTIONS OF THREE NEW SPECIES (HOMOPTERA: APHIDIDAE)*

Zhang Guangxue Chen Xiaolin Qiao Gexia
(Institute of Zoology, Academia Sinica, Beijing 100080)

Abstract This paper deals with six species of *Schizaphis* Börner, 1931, from China, including three new species: *Schizaphis* (*Schizaphis*) *chaenometicola* Zhang, sp. nov., *S.* (*S.*) *hierochlophaga* Zhang *et* Chen, sp. nov., and *S.* (*S.*) *longituberclata* Zhang *et* Qiao, sp. nov.. Descriptions of new species and a key to all Chinese species are given. All the specimens including the types are deposited in the Institute of Zoology, Academia Sinica.

Key words Homoptera, Aphidinae, Chinese *Schizaphis*, new spieces

The genus *Schizaphis* was established in 1931 by Börner with *Toxoptera graminum* Rondani as its type species[1]. There are 40 species known in the world. Three species occur in China: *Schizaphis* (*Schizaphis*) *graminum* (Rondani), *S.* (*S.*) *piricola* (Matsumura), and *S.* (*S.*) *siniscirpi* Zhang. Three subgenera, *Paraschizaphis* Hille Ris Lambers, *Euschizaphis* Hille Ris Lambers and *Schizaphis* Börner, s. str. were erected separately in 1947 and 1931[2]. The Chinese species are all belong to *Schizaphis* Börner, s. str..

In the recent study of this genus, three new species, *Schizaphis* (*Schizaphis*) *chaenometicola* Zhang, sp. nov., *S.* (*S.*) *hierochlophaga* Zhang et Chen, sp. nov. and *S.* (*S.*) *longituberclata* Zhang *et* Qiao, sp. nov., are found from China. Since *S.* (*S.*) *graminum* (Rondani) is an important pest of wheat and *S.* (*S.*) *piricola* (Matsumura) is an important pest of pear[3], it is of great practical importance to have comparative study on Chinese *Schizaphis* species.

***Schizaphis* Börner**, 1931

Anz. Schadlingsk. 7: 10

Type species: *Toxoptera graminum* Rondani, 1852

Frons with distinct, but rather low, median and lateral tubercles, the latter each with a small process. Antennae 5- or 6-segmented, shorter than body. Apical segment of rostrum usually with 2 accessory hairs. Marginal tubercles present or absent. Si-

* The work was supported by National Natural Science Foundation of China (No. 39700015)
1997-03-12收稿，1997-06-25收修改稿

phunculi cylindrical; flange present or absent. Cauda finger- or tongue-shaped. The chief distinguishing characters are the presence of one fork in media of fore wing (in species of which the alate morph has been found), and absence of central groups of spinules inside polygons formed by the usually rather inconspicuous reticulate microsculpture of dorsum in apterae.

Most species are on monocotyledens. Some are visited by ants.

Key to subgenera and species of Chinese *Schizaphis*

1. Hairs on antennal segment Ⅲ longer than basal diameter of antennal segment Ⅲ ………… *Paraschizaphis* Hille Ris Lambers (No species has been found in China)
   Hairs on antennal segment Ⅲ as long as or shorter than basal diameter of antennal segment Ⅲ …… 2
2. Cuticle sclerotic, with coarse rugose sculpture. Marginal tubercles of abdomen absent ……… *Euschizaphis* Hille Ris Lambers (No species has been found in China)
   Cuticle not sclerotic, without coarse rugose sculpture. Marginal tubercles of abdomen present or absent …… *Schizaphis* Börner s. str
3. Marginal tubercles on abdomen absent. On *Chaenomeles speciosa* (Sweet) …… *Schizaphis* (*S.*) *chaenometicola* Zhang, sp. nov.
   Marginal tubercles at least on abdominal segments Ⅰ and Ⅶ …… 4
4. Processus terminalis 6.50～8.00× as long as basal part of ultimate antennal segment. On unknown herbs …… *Schizaphis* (*S.*) *longituberclata* Zhang *et* Qiao, sp. nov.
   Processus terminalis 2.50～5.00× as long as basal part of ultimate antennal segment …… 5
5. Antennae 0.90～1.00× as long as body. Siphunculus 2.10× as long as cauda. On *Pyrus* spp. …… *Schizaphis.* (*S.*) *piricola* (Matsumura)
   Antennae 0.50～0.70× as long as body …… 6
6. Siphunculus 1.00～1.20× as long as cauda. On *Cymbopogon* spp. …… *Schizaphis* (*S*) *hierochlophaga* Zhang *et* Chen, sp. nov.
   Siphunculus 1.70～1.80× as long as cauda …… 7
7. Siphunculus pale, dorsal hairs sharp-pointed. Alatae with secondary rhinaria only on antennal segment Ⅲ. On wheat …… *Schizaphis.* (*S*) *graminum* (Rondani)
   Siphunculus dark, dorsal hairs forked at least on part of body. Alatae with secondary rhinaria on antennal segments Ⅲ～Ⅴ. On Gramineae and Cyperaceae …… *Schizaphis* (*S*) *siniscirpi* Zhang

***Schizaphis* (*Schizaphis*) *chaenometicola* Zhang, sp. nov.** (Fig. 1)

Apterous viviparous females (measurements in mm): Yellowish green in life. Body 1.500 in length, 0.760 in width. Siphunculus, cauda and femur dark. Spiracles circu-

lar, open, stigma plates pale. Marginal tubercles of abdoment absent. Mesosternal furca with separated arms. Frons with low and distinct median tubercles. Antenna 6-segmented, 0.810 in length, 0.54× as long as body, length in proportion of segments Ⅰ～Ⅵ: 26:22:100:43:36:25+122; longest hair on segment Ⅲ 0.26× as long as diameter of the segment. Rostrum reaching middle coxae, ultimate rostral segment 4+5 2.4× as long as basal width of segment, 1.0×as long as 2nd hind tarsal segment, with 2 pairs of primary hairs and 2 pairs of secondary hairs. Hind femur 0.410; hind tibia 0.620, 0.41 ×as long as body, length of hairs 0.53× as long as widest of segment; 1st tarsal segments chaetotaxy: 3, 3, 2. Siphunculus 0.240, 0.16× as long as body, 1.26× as long as cauda, with flange. Cauda conical, with 6 or 7 hairs.

Holotype: Apterous viviparous female, No. 8101-1-1-1, July 23, 1985, Tianshui City (34.6°N, 105.7°E) 1 580 m, Gansu Province, by Guangxue Zhang and Tiesen Zhong, on leaves of *Chaenomeles speciosa* (Sweet). Paratypes: 7 apterous viviparous females, No. 8101, other data same as holotype.

The new species is closely related to *Schizaphis* (*S.*) *hierochlophaga* Zhang sp. nov., but differs from the latter in: 1) marginal tubercles absent from abdomen, 2) mesosternal furca with separated arms, 3) feeding on leaves of *Chaenomeles speciosa* (Sweet).

***Schizaphis* (*Schizaphis*) *graminum* (Rondani), 1852**

Toxoptera graminum (Rondani)

Nour. Ann. Sci. Nat. Bologna 6 (3): 10

Distribution: Beijing City 100m (Apr. 4, 1984, No. Y-2732, by Xiangcai Zhang; Nov. 2, 1983, No. Y-2691; Nov. 15, 1963, No. 1384; May 19, 1977, No. 6564); Liaoning Province (Shenyang City 100m, July 4, 1983, No. Y-4506; May 30, 1983, No. Y-4750); Nei Mongol Autonomous Region (Fengzhen City 1 500 m, June 25, 1976, No. Y-1138); Gansu Province (Lanzhou City 2 000 m, July 2, 1988, No. 7946, by Guangxue Zhang; Yuzhong County 2 170 m, July 30, No. 8549, by Guangxue Zhang; Chengxian County 900 m, Sep. 15, No. 9875, by Yunfa Han); Ningxia Hui Autonomous Region (Longwa County 1 000 m, July 3, 1977, No. Y-1200, by Sengcai Wei; Yongning County 1 000 m, Oct. 15, 1971, No. Y-1022); Qinghai Province (Qinghai Lake 3 650 m, Aug. 9, No. 8593; Datong County 2 000 m, Aug. 11, 1986, No. 8651, by Guangxue Zhang); Xinjiang Uygur Autonomous Region (Turpan City 200 m, May 24, 1989, No. 9168, by Jinghua Li; May 25, 1989, No. 9189, by Guangxue Zhang; Shache County, June 25, 1989, No. 9417, by Guangxue Zhang; Ye City, June 17, 1989, No. 9419, ürümqi City 2 000 m, June 24, 1981, No. Y-2364, by Kouxuan Li; June 3, 1981. No. Y2366, by Kouxuan Li; Manas, May 30, 1979, No. Y-3599, by Haifeng Yang); Guizhou Province (Aug. 18, 1982, No. Y-3242, by Dangyang Wei); Tibet (Xigazê City

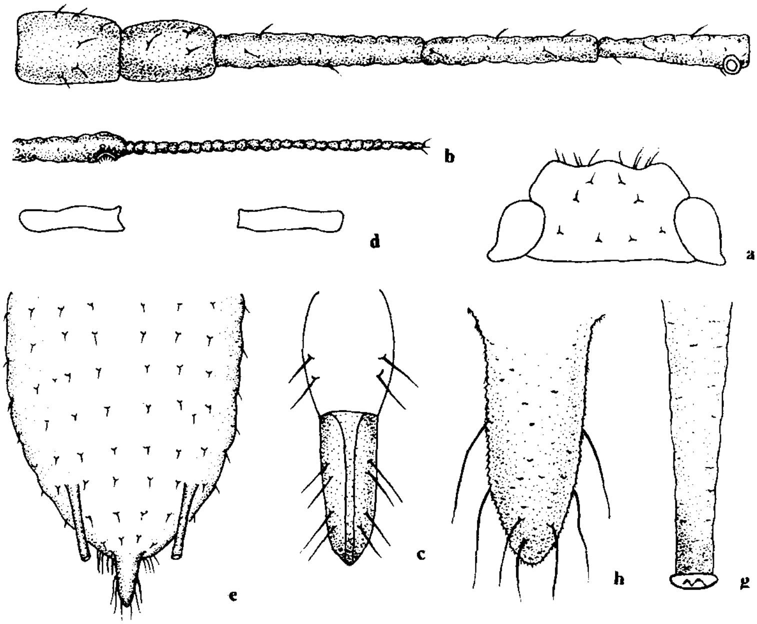


Fig. 1　*Schizaphis* (*Schizaphis*) *chaenometicola* Zhang, sp. nov.

Apterous viviparous female: a. dorsal view of head; b. antenna; c. ultimate rostral segment; d. mesosternal furca; e. dorsal view of abdomen; g. siphunculus; h. cauda

图1　贴梗海棠二叉蚜 *Schizaphis* (*Schizaphis*) *chaenometicola* Zhang，新种

无翅孤雌蚜：a. 头部背面观；b. 触角；c. 喙端部；d. 中胸腹岔；e. 腹部背面观；g. 腹管；h. 尾片

3 000 m, Oct. 8, 1981, No. Y-2265, by Changsheng Hu).

Host: wheat and some other plants in Gramineae.

***Schizaphis* (*Schizaphis*) *hierochlophaga* Zhang *et* Chen, sp. nov.** (Fig. 2)

Apterous viviparous female (measurements in mm): Yellowish green in life. Body 1.600 in length, 0.800 in width. Antennal segments Ⅳ～Ⅵ, apices of segment Ⅲ dark; tarsal dark; apices of siphunculus, cauda and anal plate dark. Spiracles circular, open, stigma plates dark. Marginal tubercles present on abdominal segments Ⅰ and Ⅶ. Mesosternal furca with short stem. Frons with lower median tubercles. Antenna 6-segmented, 1.160 in length, 0.64× as long as body; length in proportion of segments Ⅰ～Ⅵ: 25: 19: 100: 59: 61: 33+145; longest hair on segment Ⅲ 0.33× as long as diameter of segment; accessory rhinaria around primary rhinarium of segment Ⅵ sometimes flower-shaped. Rostrum reaching middle coxae, ultimate rostral segment 1.30× as long as basal width of segment, 0.70× as long as 2nd hind tarsal segment, with 2 pairs of primary hairs and 1 pair of secondary hairs. Hind femur 0.360; hind tibia 0.559, 0.31× as long as body, length of hairs 0.56× as long as width of segment; 1st tarsal segments

chaetotaxy: 3, 3, 3. Siphunculus 0.180, 0.10× as long as body, 1.13× as long as cauda, with flange. Cauda conical, with 5 or 6 hairs.

Alate viviparous females (measurements in mm): Head and thorax black, abdomen pale, frons with distinct epicranial suture. Antenna 6-segmented; length in proportion of segments Ⅰ～Ⅵ: 16: 14: 100: 63: 56: 21+97. Secondery rhinaria circular, segments Ⅲ～Ⅴ with 15 or 16, 9, 6 or 7, respectively, distributed on whole segments. Media of fore wing with one fork. Others same as apterous viviparous female.

Oviparous female: Hind tibia thickened, with 60～70 scent plaques. Cauda tongue-shpaed, with 6 hairs.

Holotype: Apterous viviparous female, No. Y2730-1-1-1, Apr. 4, 1984, Beijing City (39.9°N, 116.4°E) 100 m, by Xiangcai Zhang, on *Cymbopogon* spp; paratypes: 2 alate females, 2 oviparous females, 3 larvaes, No. Y2690, Nov. 2, 1983, Others same as holotype.

The new species is closely related to *Schizaphis* (*S*) *siniscirpi* Zhang, but differs from the latter in: 1) siphunculus 1.13× as long as cauda, 2) antennal segment Ⅳ 0.61 × as long as segment Ⅲ in apterous morph, 3) processus terminalis almost as long as antennal segment Ⅲ.

***Schizaphis* (*Schizaphis*) *longituberclata* Zhang *et* Qiao, sp. nov.** (Fig. 3)

Apterous viviparous females (measurements in mm): brown in life. Body 1.704 in length, 0.984 in width. Antennal segments Ⅰ, Ⅱ and Ⅵ, apices of segment Ⅴ dark; apices of femur and tibia, tarsi dark. Spiracles circular, open, stigma plates dark. Marginal tubercles present on abdomen segments Ⅰ and Ⅶ. Mesosternal furca with short stem. Frons without distinct median tubercles. Antenna 6-segmented, 1.620 in length, 0.95× as long as body; length in proportion of segments Ⅰ～Ⅵ: 24: 13: 100: 77: 68: 33+216; longest hair on segment Ⅲ 0.25× as long as diameter of segment. Rostrum reaching middle coxae, ultimate rostral segment 1.60× as long as basal width of the segment, 0.85× as long as 2nd hind tarsal segment, with 2 pairs of primary hairs and 1 pair of secondary hairs. Hind femur 0.504; hind tibia 0.960, 0.56× as long as body, length of hairs 0.32× as long as width of segment; 1st tarsal segments chaetotaxy: 3, 3, 3. Siphunculus 0.324, 0.19× as long as body, 1.90× as long as cauda, with flange. Cauda conical, with 4 hairs.

Holotype: Apterous viviparous female, No. 11049-1-1-1, Sep. 18, 1996, Shanghang County (25.0°N, 116.4°E) 500～600 m, Fujian Province, by Gexia Qiao, on unknown herbs; paratypes: 4 apterous viviparous females, No. 11049, other data similar to holotype.

The new species is closely related to *Schizaphis* (*Schizaphis*) *siniscirpi* Zhang, but differs from the latter in: 1) processus terminalis 6.50～8.00× as long as basal part of ultimate antennal segment, 2) living on herbs. The new species has very long processus

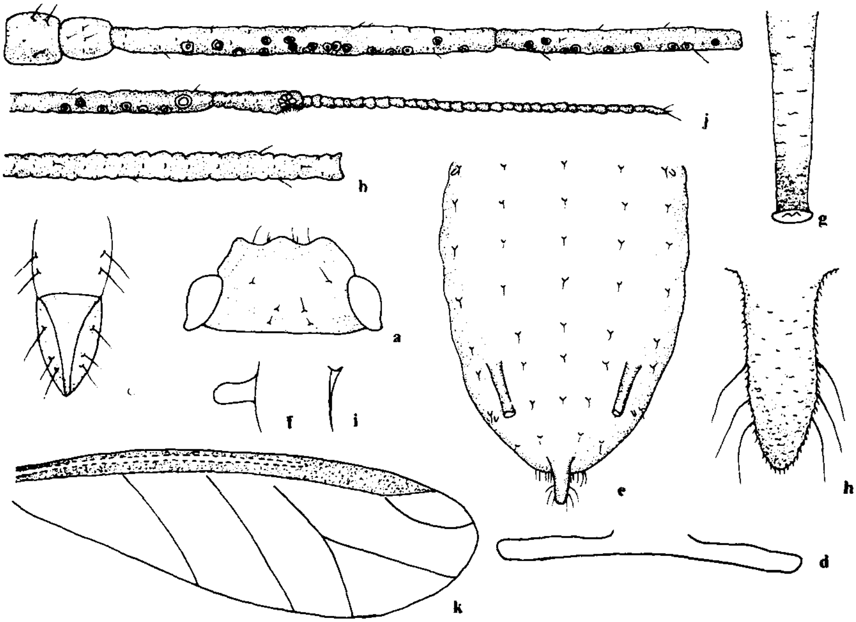


Fig. 2 *Schizaphis* (*Schizaphis*) *hierochlophaga* Zhang *et* Chen, sp. nov.
Apterous viviparous female: a. dorsal view of head; b. antenna Ⅱ; c. ultimate rostral segment; d. mesosternal furca; e. dorsal view of abdomen; f. marginal tubercles; g. siphunculus; h. cauda; i. dorsal hairs. Alate viviparous female: j. antenna; k. fore wing

图2 香草二叉蚜 *Schizaphis* (*Schizapis*) *hierochlophaga* Zhang *et* Chen，新种
无翅孤雌蚜：a. 头部背面观；b. 触角节Ⅱ；c. 喙端部；d. 中胸腹岔；e. 腹部背面观；f. 缘瘤；g. 腹管；h. 尾片毛。有翅孤雌蚜：j. 触角；k. 前翅

terminalis, which is rare in *Schizaphis* but ordinary in *Rhopalosiphum* Koch, 1854. However, it is different from *Rhopalosiphum* in: 1) its dorsal cuticle without reticulate pattern consisting of polygons with a few central spinules in each of them, 2) its siphunculus not swollen, not constricted below well developed flange.

***Schizaphis*. (*Schizaphis*) *piricola* (Matsumura), 1917**

Toxoptera piricola Matsumura

Coll. Tohoku imp. Univ. 7, 6: 414

Distribution: Beijing City 100 m, May 16, 1977, No. 6561, by Tiesen Zhong; Hebei Province (Changli County 100 m, May 19, 1973, No. 1699; Shijiazhuang City 100 m, Apr. 1979, No. 1629; Yingkou City 100 m, May 17, 1977, No. 1189, by Chengben Zhao); Shanxi Province (Yulin County 100 m, Sep. 22, 1979, No. Y1753); Guizhou Province (Guiyang City 2 000 m, July 13, 1979, No. 1968, by Zefen Wang); Zhejiang Province (Hangzhou City 200 m, Apr. 28, 1975, No. 5508, by Tiesen Zhong; Linan

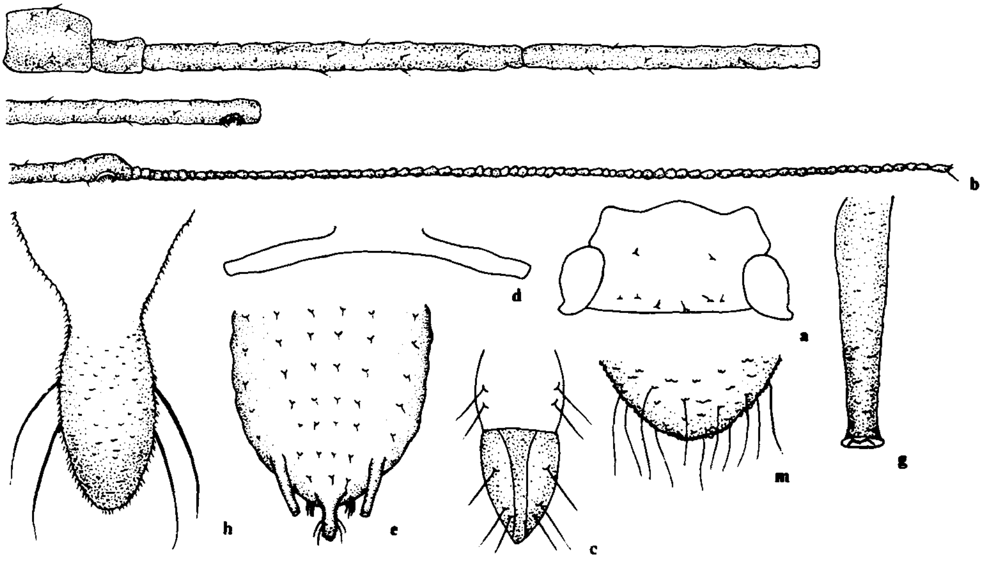


Fig. 3 *Schizaphis* (*Schizaphis*) *longituberclata* Zhang *et* Qiao, sp. nov.
Apterous viviparous female: a. dorsal view of head; b. antenna; c. ultimate rostral segment; d. mesosternal furca; e. dorsal view of abdomen; g. siphunculus; h. cauda; m. anal plate
图3 长管二叉蚜 *Schizaphis* (*Schizaphis*) *longituberclata* Zhang *et* Qiao，新种
无翅孤雌蚜：a. 头部背面观；b. 触角；c. 喙端部；d. 中胸腹岔；e. 腹部背面观；g. 腹管；h. 尾片；m. 尾板

City 200 m, May 10, 1975, No. 5673); Hainan Province (Ledong County 700 m, Mar. 6, 1984, No. 7815, by Tiesen Zhong).

Host: *Pyrus* spp.

***Schizaphis* (*Schizaphis*) *siniscirpi* Zhang, 1983**

Entomotaxonomia Vol. V No. 1: 39

Distribution: Henan Province (Anyang City 400 m, May 27, 1957, No. 531, by Guangxue Zhang)

Host: Gramineae and Cyperaceae

References

1 Eastop V F, Hille Ris Lamber. Survey of the world's Aphids, 1976, 387～389
2 Heie O E. The Aphidoidea Hemiptera of Fennoscandia and Denmark. Ⅱ, 1986, P58～81
3 Guangxue Zhang, Tiesen Zhong. Economic insect fauna of China Fasc. 25 Homoptera: Apidinea, Part Ⅰ. Science press, Beijing. 1983. 253～256

中国二叉蚜属研究及三新种记述
（同翅目：蚜科）

张广学 陈小琳 乔格侠
（中国科学院动物研究所，北京 100080）

摘要 本文记述中国二叉蚜属 *Schizaphis* Börner 6种，其中包括3新种：贴梗海棠二叉蚜 *Schizaphis* (*Schizaphis*) *chaenometicola* Zhang, sp. nov.，香草二叉蚜 *Schizaphis* (*Schizaphis*) *hierochlophaga* Zhang *et* Chen，sp. nov. 和长管二叉蚜 *Schizaphis* (*Schizaphis*) *longituberclata* Zhang *et* Qiao，sp. nov.，并附亚属、种检索表。模式标本存放中国科学院动物研究所标本馆。

贴梗海棠二叉蚜 *Schizaphis* (*Schizaphis*) *chaenometicola* Zhang，新种（图1）

正模：无翅孤雌蚜，No. 8101-1-1-1，甘肃：天水（北纬34.6°，东经105.7°）1 580 m，贴梗海棠 *Chaenomeles speciosa* (Sweet)，1985-Ⅶ-7，23，张广学、钟铁森；副模：7无翅孤雌蚜，其它同上。

该种触角约为体长的0.50～0.70倍，腹管略长于尾片，与香草二叉蚜相近，但腹部各节无缘瘤，中胸腹盆两臂分离，寄主贴梗海棠和山丁子，使其不同于本属内任何种。

香草二叉蚜 *Schizaphis* (*Schizaphis*) *hierochlophaga* Zhang *et* Chen，新种（图2）

正模：有翅孤雌蚜，No. Y2690-1-1-3，北京（北纬39.3°，东经116.4°）100 m，香茅草 *Cymbopogon* spp，1983-Ⅵ-2，张向才。副模：1有翅孤雌蚜，1无翅孤雌蚜，No. Y2690-1-1-2，其它同上。

该种触角约为体长的0.64倍，有翅孤雌蚜触角3～5节有次生感觉圈与中华莎草二叉蚜相似，但腹管仅略长于尾片（后者为尾片的0.18倍）；无翅蚜触角第四节为触角第三节的0.61倍（后者为0.31倍）；有翅蚜触角鞭部约与触角第三节等长（后者为触角第三节的1.57倍）。

长管二叉蚜 *Schizaphis* (*Schizaphis*) *longituberclata* Zhang *et* Qiao，新种（图3）

正模：无翅孤雌蚜，No. 11049-1-1-1，福建：上杭（北纬25.0°，东径116.4°）500～600 m，禾本科杂草，1996-Ⅸ-18，乔格侠；副模：3无翅孤雌蚜，其它同上。

该种与 *S.* (*S.*) *siniscirpi* 相似，但有以下特征可区别：1）触角第6节鞭部长度是基部的6.50～8.00倍；2）生活在禾本科植物上。该种触角第6节鞭部特别长，这一特征在 *Schizaphis* 中少见，而在 *Rhopalosiphum* Koch，1854中常见，但其背部无多角形内有中央小刺的网纹且腹管不膨大，从而可与 *Rhopalosiphum* 相区别。

关键词 同翅目，蚜亚科，中国二叉蚜属，新种